# Bachelor of Science in Biology: Concentration in Ecology - Quantitative Reasoning Category III/IV and Stretch English

120 Total Units Required  
Minimum Number of Units in the Major: 67

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 230</td>
<td>Introductory Biology I (Major Lower-Division Core)</td>
<td>5</td>
</tr>
<tr>
<td>ENG 104</td>
<td>Writing the First Year: Finding Your Voice Stretch I</td>
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<tr>
<td>MATH 197</td>
<td>Prelude to Calculus I (Prerequisite for MATH 226)</td>
<td>3</td>
</tr>
<tr>
<td>GE Area A</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>GE Area C</td>
<td></td>
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<tr>
<td><strong>Units</strong></td>
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<tr>
<td><strong>Second Semester</strong></td>
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<tr>
<td>CHEM 115</td>
<td>General Chemistry I: Essential Concepts of Chemistry (Major Lower-Division Core)</td>
<td>5</td>
</tr>
<tr>
<td>ENG 105</td>
<td>Writing the First Year: Finding Your Voice Stretch II (A2)</td>
<td>3</td>
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<tr>
<td>MATH 198</td>
<td>Prelude to Calculus II (Prerequisite for MATH 226, B4)</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 111 &amp; PHYS 112</td>
<td>General Physics I and General Physics I Laboratory (Major Lower-Division Core, B1, B3)</td>
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<tr>
<td><strong>Units</strong></td>
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<td><strong>Third Semester</strong></td>
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<tr>
<td>BIOL 240</td>
<td>Introductory Biology II (Major Lower-Division Core)</td>
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<tr>
<td>MATH 226</td>
<td>Calculus I (Major Lower-Division Core, B4)</td>
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<tr>
<td>GE Area D</td>
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</tr>
<tr>
<td>GE Area E</td>
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<td><strong>Units</strong></td>
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**Fourth Semester**

<table>
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<tr>
<th>Course</th>
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<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CHEM 130</td>
<td>General Organic Chemistry (Major Lower-Division Core)</td>
<td>6</td>
</tr>
<tr>
<td>MATH 227</td>
<td>Calculus II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 121 &amp; PHYS 122</td>
<td>General Physics II and General Physics II Laboratory</td>
<td></td>
</tr>
<tr>
<td>GE Area A</td>
<td></td>
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</tr>
<tr>
<td><strong>Units</strong></td>
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**Fifth Semester**

<table>
<thead>
<tr>
<th>Course</th>
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<th>Units</th>
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<tbody>
<tr>
<td>BIOL 355</td>
<td>Genetics (Major Upper-Division Core)</td>
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<tr>
<td>BIOL 458</td>
<td>Biometry (Major Upper-Division Core)</td>
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<tr>
<td>GE Area C - Take Two</td>
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<td>6</td>
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<tr>
<td>GE Area D</td>
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**Sixth Semester**

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<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>BIOL 337</td>
<td>Evolution (Major Upper-Division Core)</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 525 or BIOL 630</td>
<td>Plant Physiology (Major Upper-Division Core) or Animal Physiology</td>
<td>3</td>
</tr>
<tr>
<td>Major Upper-Division Electives (11–14 Units Total) - Take One</td>
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<td>2-4</td>
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<tr>
<td>GE Area D</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>SF State Studies or University Elective</td>
<td></td>
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</tr>
<tr>
<td><strong>Units</strong></td>
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<td>14-16</td>
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**Seventh Semester**

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<tr>
<th>Course</th>
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<th>Units</th>
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<tbody>
<tr>
<td>Major Upper-Division Electives (11–14 Units Total) - Take Two to Three</td>
<td></td>
<td>8</td>
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<tr>
<td>Major Upper-Division Requirement (6–8 Units Total) - Take One</td>
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<td>4</td>
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<tr>
<td>GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Units</strong></td>
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<td>15</td>
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</table>

**Eighth Semester**

<table>
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<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Major Upper-Division Electives (11–14 Units Total) - Take One</td>
<td></td>
<td>2-4</td>
</tr>
<tr>
<td>Major Upper-Division Requirement (6–8 Units Total) - Take One to Two</td>
<td></td>
<td>4-6</td>
</tr>
<tr>
<td>GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course)</td>
<td></td>
<td>3</td>
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</tbody>
</table>
Bachelor of Science in Biology: Concentration in Ecology - Quantitative Reasoning Category III/IV and Stretch English

<table>
<thead>
<tr>
<th>SF State Studies or University Elective - Take Two</th>
<th>5</th>
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<tbody>
<tr>
<td>Units</td>
<td>14-18</td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td>120-127</td>
</tr>
</tbody>
</table>

1. **ENG 114** can only be taken if you complete Directed Self-Placement (DSP) and select **ENG 114**; if you choose **ENG 104/ENG 105** through DSP you will satisfy A2 upon successful completion of **ENG 105** in the second semester; multilingual students may be advised into alternative English courses.

2. Depending on courses completed through Early Start, students in Pathway/Category III or IV may be required to enroll in a support course to complement their Quantitative Reasoning/B4 requirement. There are multiple course options for this pathway. Before enrolling in a B4 course, students should verify their MATH Pathway/Category in their **Student Center**. Information regarding the courses that correspond with your MATH Pathway/Category can be found on the **Developmental Studies Office Website**.

3. **QR Category III** students with a grade of B or higher in high school pre-calculus in the past year may be able to enroll in **MATH 226**. Please see a department advisor.

4. To avoid taking additional units, it is recommended that you meet **SF State Studies** requirements (AERM, GP, ES, SJ) within your GE.

5. **GE Areas B2 (Life Science)** and **B3 (Laboratory Science)** are satisfied upon completion of **BIOL 240**.

6. **GE Area B1 (Physical Science)** is satisfied upon completion of **CHEM 130**.

7. **Upper-Division General Education, Physical, and Life Sciences (UD-B)** is satisfied upon completion of **BIOL 355**.

8. **Major Upper-Division Electives (11-14 units)**
   Select 11-14 units upon advisement from the alternates not used in fulfilling the requirements listed above, or any other upper-division Biology courses not specifically excluded for major credit, or any graduate course in Biology.

9. **Major Upper-Division Requirement (6-8 units)**
   Select 6-8 units on advisement from the following:
   - **BIOL 482 Ecology** (4 units)
   - **BIOL 490 Ecology of Infectious Diseases** (4 units)
   - **BIOL 529GW Plant Ecology - GWAR** (4 units)*
   - **BIOL 530 Conservation Biology** (3 units)
   - **BIOL 532 Restoration Ecology** (3 units)
   - **BIOL 534 Wetland Ecology** (4 units)
   - **BIOL 577 Ecological and Environmental Modeling** (4 units)
   - **BIOL 580 Limnology** (3 units)
   - **BIOL 582 Biological Oceanography** (4 units)
   - **BIOL 585 Marine Ecology** (3 units)
   - **BIOL 586 Marine Ecology Laboratory** (2 units)
   *
   Students are required to complete at least one GWAR course in order to graduate.

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**Notes:**
- Students are required to complete at least one GWAR course in order to graduate.
- Please see a department advisor for additional guidance.
- Information regarding course options and requirements can be found on the Developmental Studies Office Website.